

## History / Achievement

2006-2009

2006

- 10-Tbit/s-class Large-capacity Optical-transmission Technology
- Wireless System Technologies for Wide-area Ubiquitous Networks
- SiGe BiCMOS Burst-mode Optical Receiver for 10G-EPON Systems
- Millimeter-wave Fluoroscopic Scanner (Crack Scan)



- 100-Gbit/s DQPSK Modulator using PLC-LN Hybrid Integration



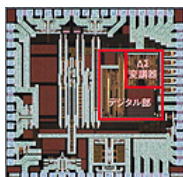
- Mid-infrared Wavelength Conversion Laser for Gas Sensing
- Buru-Navi: Haptic Interface using Characteristics of Human Perception



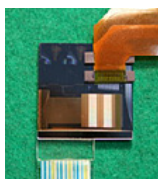
- Statistical Machine Translation (SMT)
- Aluminum Nitride Ultraviolet Light-emitting Diode with the Shortest Emission Wavelength
- Single Electron Ammeter

2007

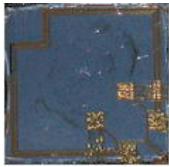
- Web Access Shaping to Realize Overload-tolerant Web Sites
- Burst-mode CDR Circuit Using a  $\Delta\Sigma$  D/A Converter for 10G-EPON Systems



- RedTacton: New Human Area Networking Technology that Uses Humans as Transmission Paths
- Quasi-millimeter-wave Highly Integrated Three-dimensional-MMIC Technology
- High-speed Wavelength-tunable Laser using Double-ring Resonator
- 1-square-inch 100-GHz 40-ch Variable Optical Attenuator Multi/Demultiplexer



- Visual Mechanisms of Material Perception
- Speaker Indexing in a Meeting
- Persistent Supercurrent Atom Chip



- Quantum Key Distribution Over 200 km of Fiber

## 2008

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- 10-Tbit/s-class Large-capacity Optical-transmission Technology
- Low-complexity Error-correction Technology for Robust Video Streaming
- 120-GHz-band, 10-Gbit/s Wireless Transmission System
- 10 G-class Communication LSI Design Technology



- 40 Gbit/s DQPSK Optical Front-end



- PLC-LN Hybrid-integrated Modulator for Ultra-high-speed Transmission
- Speech Dereverberation Technique for Audio Postproduction
- Unraveling the Brain's Strategy for Representing Location of Sounds
- Revolutionary Semiconductor Devices Integrating Tiny Machines



- Manipulation of Light by Photonic Nanocavity

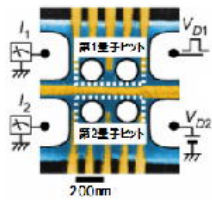
## 2009

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- 69.1-Tbit/s Optical Transmission Technology Using Digital Coherent Multilevel QAM Format
- Wide-area Ubiquitous Network that Allows Communication with Objects
- With RedTacton, No Need to Carry a Card
- Ultra-small Battery-less Sensor Nodes
- Hybrid Optoelectronic Router



- Optical Devices for High-speed, Long-reach Communication Networks
- Natural Language Processing by Semi-supervised Learning
- "Robust Media Search" Instantaneously Identifies Audio/video Content
- Semiconductor Quantum Bit Achieves 2-qubit Operations



- Time-lapse Imaging of Conformational Changes in Single Receptor Protein